



# Innovative ultra-**BRO**adband ubiquitous **W**ireless communications through terahertz transceivers

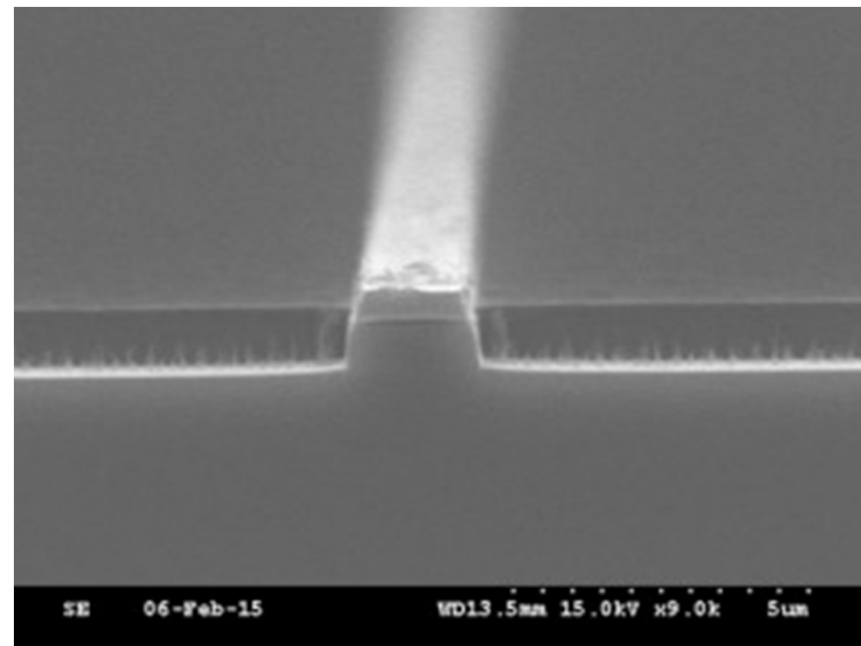
The iBROW project will address the growing requirement for high bit rate short range wireless communication. It is expected that by 2016 data traffic from wireless devices will exceed that from wired devices. Forecasts suggest that wireless data rates of multiple tens of Gbps will be required with a few years and this demand cannot be met with current technology.

Resonant tunnelling diode (RTD) transceiver technology could provide the solution.

- Low cost simple wireless transceiver architecture
- Already 10 Gbps is possible by exploiting the mm-wave and THz frequency spectrum
- Up to 100 Gbps is feasible in the longer term.

iBROW will develop a novel short range wireless communication transceiver technology that is:

- Energy-efficient, compact and ultra-broadband
- Seamlessly interfaced with optical fibre networks
- Capable of addressing future network requirements.



iBROW will achieve a novel RTD device technology on a III-V on Si platform integrated with laser diodes and photo-detectors. This approach offers a simple technology that can be integrated into both ends of a wireless link, consumer portable devices and fibre-optic supported base-stations.

**For more information please have a look at the project website!**

*iBROW is a collaborative research project supported by the European Commission through Horizon 2020 under Grant Agreement 645369.*

[www.ibrow-project.eu](http://www.ibrow-project.eu)

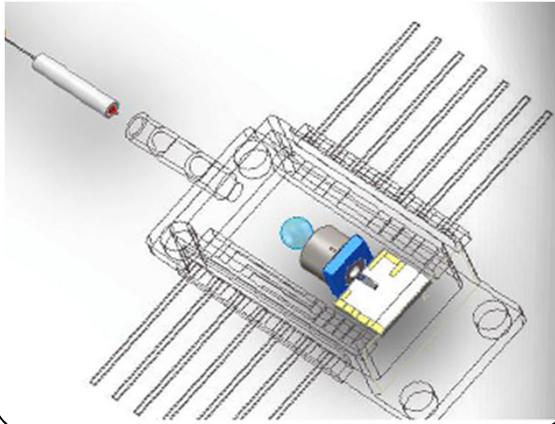




### Packaging aspects

iBROW will consider thermal, mechanical and optical packaging design

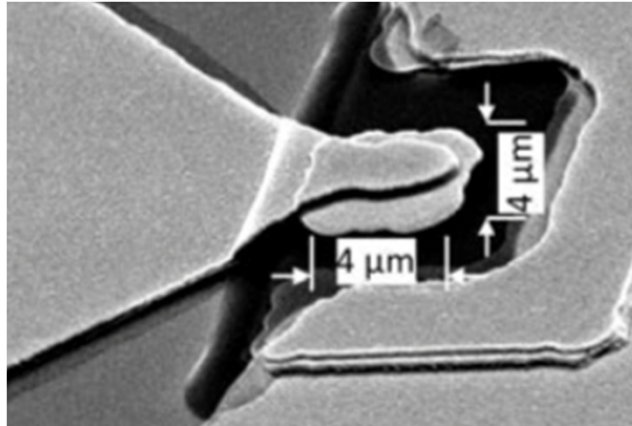
- Hermetic sealing
- Lensed fibre coupling.



### Low cost manufacture

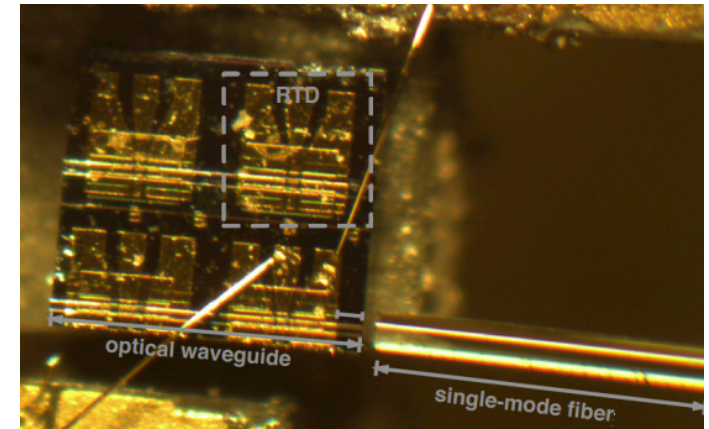
iBROW is based on a potentially low cost manufacturing technique.

- Direct growth of III-V RTD layers on a Si substrate
- Direct wafer bonding between III-V & Si substrates
- Potential for large diameter wafers (up to 200 mm OD)
- Simple integration with CMOS.



### Seamless interface

- From the outset iBROW will consider integration aspects to ensure seamless connections to high speed photonic networks
- A test-bed for the demonstration of >10 Gbps wireless communication between several stand-alone prototype nodes at ~90 GHz and ~300 GHz will be developed.



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